

2014-15 University of Utah Undergraduate Problem Solving Contest

Problem 2

Due November 3, 2014

What is the smallest set of numbers such that each of the thirteen powers of 2, from 2^1 up to and including 2^{13} , can be obtained by way of multiplying or dividing numbers from the set at most once? (To be clear, no element from the set you give should be used more than once to represent any power of 2 in the thirteen powers of 2.) Show your work and justify your answer.

In the spirit of UPSC, you should not use the internet or look up the solution in a book. Please include your **name, student ID number, and email address** on your solution. Grading will proceed more quickly if your final answer is written clearly at the beginning of the first page of your solution, followed by your work and justification.